

ABSTRACT OF THE DISCLOSURE

A laser-based measuring apparatus divides a light beam from a laser light source into at least two light beams, passes the light beams through different optical paths from each other, recombines the light beams, has the light beams interfere with each other to generate interfered light, opto-electrically transduces the interfered light to an optical frequency, and measures the amount of travel of an object which changes an optical path length of a portion of an optical path based on the optical frequency. The measuring apparatus has a portion for generating at least two measuring light beams from the laser light source, two reflection planes included in an object moving on a measuring axis, arranged back-to-back to each other on the measuring axis, and an opposing incident optical system for directing the measuring light beams into the reflection planes, respectively, such that the measuring light beams oppose to each other on the measuring axis.